

Book Review

**PRINCIPLES OF GENE MANIPULATION:
AN INTRODUCTION TO GENETIC
ENGINEERING, 5th ed.
by R.W. Old and S.B. Primrose
Blackwell Scientific Publications,
Boston, 1994, 474 pp.**

The discovery of the structure of DNA by Watson and Crick in 1953, followed by an understanding of the linear array of triplet codon functions, resulted in a clear picture of the regulation of gene expression. Since then, enormous progress has been made toward manipulating genes. While some of us were still struggling to understand the structure of DNA, Old and Primrose showed they were far ahead by publishing the first edition of "Principles of Gene Manipulation." Subsequent editions were updated and enlarged. This edition must have been quite a challenge, since the authors made every possible attempt to cover the fundamental basis of gene manipulation. In 17 chapters are covered, though briefly: gene manipulation as an all-embracing technique; basic techniques; cutting and joining DNA molecules; plasmids as cloning vehicles for use in *E. coli*; bacteriophage and cosmid vectors for *E. coli*; cloning strategies, gene libraries, and cDNA cloning; recombinant selection and screening; expression in *E. coli* of cloned DNA molecules; analyzing DNA sequences; the polymerase chain reaction; changing genes: site-directed mutagenesis; cloning in bacteria other than *E. coli*; cloning in *Saccharomyces cerevisiae*

and other microbial eukaryotes; gene transfer to plants; introducing genes into animal cells; transferring genes into animal oocytes, eggs, embryos, and specific animal tissues; and the impact of recombinant DNA technology: the generation of novelty.

The authors have dedicated an entire chapter to the polymerase chain reaction (PCR), a fundamental tool in genetic engineering. Some of the areas in this volume may be difficult to comprehend, especially by those who do not have bench experience in molecular biology. This is an excellent book for undergraduate students with some knowledge of bacterial and viral genetics. This book is a good start for those who wish to venture into the era of molecular medicine. It is impossible to address every aspect of gene manipulation, since the field is expanding at breathtaking speed. As we have begun to intensify the process of deciphering 75,000–100,000 genes, a new approach for treating genetic diseases has just emerged. In future editions, the authors may wish to have a separate chapter on gene-therapy, and a glossary of terms. This will be greatly appreciated by all readers.

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